WYBC TECHNICAL DEPARTMENT HEADQUARTERS
452 C Avenue
Coronado, California

5 July, 1954

Dear Execs, Teckies, and sundry other of
the priviledged few:

GREETINGS: I beleive this is the proper salutation for a letter of this sort. This is not the U.S.&A., but rather, good 'ole WYBC draft board # 165. Seriously though, this is going to about 18 or twenty of you, and after you have read, marked, learned, and inwardly digested the contents herewith, I request you to fill out the coupon attached at the end, send in with one or two tops from a box of solder, (SEND NO MONEY), and address to contest headquarters (above). Entries will be judged on aptness of thought, and earliest date of arrival in good old NH. You, I mean, not the answer. I can't seem to get serious, but I am expecting a reply from each and every one of you. This is extremely important.

For the benefit of those of you who are not in the know, we are requested by the University not to resume broadcasting, Radio and TV, until we have met the letter of the FCC law. Consequently, Boorsch, myself, and members of the department have been burning up the airlines with correspondence trying to get things squared away preparatory to doing a major job on transmission, early in the fall. As it stands now, I expect to field a team in the tech room and the tunnells on the afternoon or evening of the 8th of Sept, Wed. By that time, I expect to have three of the main tech boys, with the others arriving early the following week. This is an extremely small number to undertake a job of this magnitude. I can't begin to describe to you who are not familiar with it, the extent to which the work is going to have to be done, but it is phenominal, and there are not two ways about it, I would, therefore, like as many of you as humanly possible to be there, in NH, ready to start work, by the evening of the 8th. I want each of you to reply quickly, so I can start forming teams centering around a tech man, about three per team. Additional teams to be formed as others arrive. Let me hasten to tell you who are not tech, that no tech knowledge is needed. We have the know-how and a limited amount of manpower, but each of you will be invaluable to assist with an extra pair of hands. I won't pull any punches, because I'll tell you right now that the work you will be doing won't be particularly glorious, actually probably sheer drudgery, and hot. You will however, be performing tasks which would otherwise have to be done by one of the tech staff, whose knowledge could be put to better use. This will involve, coordinating parties, messengers, helpers in the tunnells, and many other details which are always time consuming but which must be done. But when you get through, I think we can guarantee you will know WYBC as you never knew it before, and will have performed an invaluable service besides. If we sart as scheduled on the 8th, that will leave only 13 days until Frosh week starts. I hope to arrange it so that shifts can work around the clock during this period, and the tech boys will probably be putting in about 18 hours a day at it. A limited amount of Financial assistance will be extended to those of you who can't possibly stand the expense of an early arrival; please indicate in reply but only if absolutely neccessary. We are going to do our damndest to get on the air, all certified, by the 22nd which is the start of Frosh week. The staff is fairly sure that we can remidy the problem, but as usual cannot guarantee a thing until we are actually broadcasting again. As you know, it means a great deal to us both financially and freshmen-PR-wise to make it by the 22nd. I can't urge you enough to move heaven and earth to get there by the 8th, and if not then, as soon after as humanly possible. What it boils down to, is that it all depends on the manpower. With enough help, we hope to squeeze by the deadline. If we have to carry the whole thing by ourselves (the dept.) it looks pretty hopeless. That's the picture, addmittedly not too bright, but it is up to you execs and others. The tech staff will be there... Will You ?

This will probably inconvenience many of you, as it is me. I will have to furnish my own transportation home, as the family is leaving much later, and this is apt to cost money. So fill out the attached, with comments please, and send off as soon as possible. Any change in plans will be sent on to you as they develope.

Whereas the preceeding was addressed mainly to others than my staff, the following is to both. I sent some of the teckies a copy of a letter I received from Prof. McNamara of the EE dept. He laid out some very cogent ideas which we will certainly follow. His ideas were primarily pointed to forming a basis for further work. Those of my staff who did not receive a copy, and would like an idea of the proceedure, indicate on return sheet and I will try to run off a synopsis. I hope that will take no more than 2 days, or three at the most. That will leave about 10 days, more or less to get the real work done. Tucker is under contract with GE until the 17th, but will be in NH for a conference on Saturday the 11th. Massy and I expect to arrive Wed, and I hope Yingling will be there Wed or Thurs. Darling, Dewey and Pickett I did not have the addresses for until Boorsch got them for me today. I have not heard from Lynn although I have sent several communications his way. Cohen I have no address for. No word from Hoskins either. I hope they will respond to this. Oh yes, we will have utmost need for a car. I was hoping Krause or Putney could supply one, but it seems they won't be there. Putney will be touring in the west, and God Knows what Krause's excuse is. But if you all are " too busy " we might as well give up now. Maybe Stevens or O'bs will have theirs. Please note on return stub. The rest of this epistle, except for the last few lines, is addressed primarily to the tech boys, but should make interesting reading for all of you, and might even help to give you an idea of what has to be done.

The following is apt to be rather incoherent and discontinuous in spots for I am trying to answer three letters at once, and still inform the others in the dept, who are as yet uninformed. As I noted above, we will do the testing described by Mac. The Fld Srnth Mtr has been arranged for. (Time out for lunch and a quick trip for more stencils)(Back again) This testing consists of measurements to determine the radiation as is. Next disconnect the coax from the junctions and affix resistors. Retune to the same power and take readings again. A scanty summary I know, but the deal is that when we get through we will have a good idea if its the power lines or the coax lines which is doing the radiation. Stu, you disagree with Mac's idea that a first approx would be the power lines. You attempted to explain this to me, but I don't think you ever got around to making the point. I will enclose the copy again so you can see what he says, then inform me your objections. Please send the copy back again, as I sent the original to Whiteman. About a week ago I sent a special delivery air mail to Stu with my latest fabulous idea. I made a copy for the files but sent itt to Massy instead. That's why you didn't get one John, don't feel neglected. Principaly the idea is this. Why not use a SWR meter to knock out the reactance at each junction. A 1:1 ratio means a pure resistance, so we could connect one and only one junction box to the transmitter with meter in the circuit, and add cap or ind in series or parrallel until the meter started going down, and then add until a minimum has been reached. Incidentally, after I sent the letter, I thought of a coupleo of things, both of which were anticipated by Stu and Bill. We could not get a strict 1:1 ratio because we would have to have the coax be the same impedance as the connection point, so since the ratio increases as X/R, a minimum should indicate a resistance match. Now the next point is the problem. What is the resistance of the connection point (and by connection point I mean the boxes in the basement of the colleges) ? We cannot use an ohmeter because of the condensers. Would the ammeter and the voltmeter at the transmitter give an adequate picture. Massy says no, and then goes into a lot of malarky about nodes and anti-nodes. I still

in

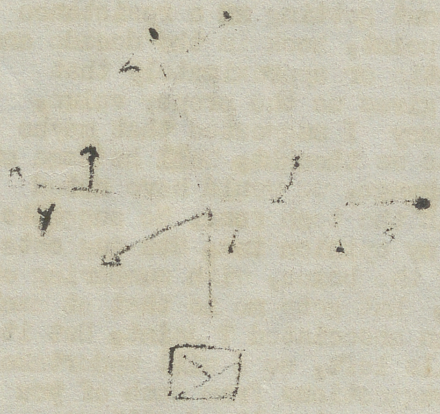
don't see Bill, how e and i can be ~~xxxxxx~~ phase at the nodes and anti-nodes and out of phase elsewhere, but that is immaterial because we could not get at them anyway. The rest of you don't know what he was getting at, but I won't bother to explain it. Just Massy theorizing. If the transmitter ammeter and voltmeter don't give us an accurate picture of the resistance at each junction (connection0) point, then how about a signal generator right at the point, with a lead of only a few inches, and use a voltmeter and micro ammeter. Would this ~~xxx~~ do the trick? Any way, having eliminated the reaxtance with the SWR meter, then having determined the pure resistance (?) we could add resistors in series or parralleℓ to get the right match to 52 ohms. Stu and Bill seem to agree that this would probabl work. Stu suggested that the SWR meter could be put into the circuit right at the box, thereby eliminating the need for an intercom system to the tech room from the tunnell. I though of this Stu, after the letter was in the mail, and is a good thought. Eliminate a lot of fuss and bother. Stu says that to match with resistors, put 52 ohms on each point and add series resistors down the line to counteract the parralleling effect, but I say that all points are in parralle , so all we need to do, is multiply 52 times the number of ~~junction~~ connection points(28) and tack these on each point, and all the junctions will take care of themselves. I was fooling around with this the other night and I came to the conclusion that all our points branch out from the source, and that they can all be traced back as intersecting at one point, thereby making each one in parrallel with the others. What about it ?
To answer you Stu. We have the SWR bridge, all it need is a little putting together. About an hour's work. What about your impedance bridge kit, Bill? Is it done, I hope ? Getting back to the Ray theory, if we find that we cannot accurately determine the resistance, how about getting ~~xx~~ a resistance decade and after correcting the reactance at each point, hook in the decade and vary it, in series and parrallel, until the 1:1 ratio or approximately that has been reached. The reading on the decade would gives us the proper value. Stu had a good thought. In my letter to him and Massy I suggested that maybe the constantly changing impedance was not as bad as we thought. Well he came out with the observation that if there was~~x~~a radical change, we would have noted this from wide variations in the antenna ammeter in the tech room. He suggests it is either negligible, or compensating. That is my opinion too. Stu suggests an accurate diagram, not neccessarily to scale, of the boxes, with numbering of each section of line, each box, and each junction. What gets me is that at each box except the ones on the end of a run, we have an associated T joint. But it is an excellant idea, an I should have some stencils left, so I will undertake this project and get some run off. I would like suggestions from each of you tech boys as to organization and general tools needed; naturally I will use only half an eye to read John's list. Now don't get mad John, I'm only kidding. Congrats to Bill on getting his Fust Class Fone! Stu suggests that we could set up a trial box in the tech room and feed the lines there, so we can get an idea about what is going to happen out in the tunnells, with the swr meter et all. Good plan. Give me an ETA (estimated time arrival) Stu so I can get aholt of Mac. Will it be Fri nite of Sat morn. I would like all of us to hash this over with him. We should have all the data by then. John sent out a letter " The Yingling Papers " which had some cogent suggestions. However, John, we must reserve our descision until we see what the data has to show. His idea was one run to the power house with one insertion there. But as he suggests this might be defeated by radiation and line loss. I am inclined to agree, and would say and Massy agrees (no comment from Tuckeras yet) that this is a possibility but if we can match up the present system adequately, and it seems we might be able to, I would rather put a small amount of power in a lot of places than a lot in one place. Remember, when it gets matched, the power transfer should be far superior, and a lot less power should be neccessary. But lets keep it in mind. So it boils down to playing individually with each of 28 connection points. A long job, but after we get the hang of it, it should go pretty easily. I HOPE! Any way, we are farther along now than we have been. Things are going well otherwise. Boorsch got an OK from theuniversity to use the transmitter to test with. I have arranged to use the TD and Saybrook Shops. I hope all you tech

boys save your correspondence and bring it with you to NH. I have a pile about 6 inches high already. Anybody got any ideas on how to get back to the east coast cheap, other than hitch-hiking?

Well, it's taken about a day to type, mimeograph, and send this out, so at least gives me a few minutes and sit down and answer this. The sooner I know where we stand regarding manpower, the better we will be able to make plans. No word yet from telco on Sports Net. Expected this week. Gray is probably clutching. Boorsch called him Glen, and he promised them this week direct to Calif. Hope you all are having a wonderful summer. Please do fill in the attached and rush poste-haste via the US Airmail Service to my little Adobe Hacienda in Sunny Cal. See yall soon.!.!

COPIES:				
	Boorsch	Tucker	Dewey	Curtiss
	Johnson, Bob	Massy	Darling	Gray
	Johnson, Reid	Yingling	Hoskins, Bill	Speed
	Krause	Farnham	Hoskins, John	Payne
	O'Brien	Pickett	Calleton	
	Putney	Lynn	Stevens	

sample transmission section



Aren't points 1,2,3,4 all electricall the same and therefore all boxs parrallel ?

Come on you loafer!
I want you here early!!
Carl.

Name: _____

Expect to be in NH ready to work on Sept. ____

COMMENT: (please) teckies write more re: methods.

Mail to: 452 " C " Ave. ; Coronado, California